and energy. He had often complained of ill health. But nothing in his appearance had ever suggested to me ground for serious anxiety. I had hoped to have induced him to pay us a visit this year. I could not go to his funeral; nothing remains but the sad satisfaction of writing these lines to his memory.

Cornu was born July 16, 1843, at Orléans. The ability which he displayed in his schooldays seemed at first likely to be absorbed by studies on the literary side. But under the influence of his father and of his distinguished brother, Alfred Cornu, he devoted himself to mathematics, and with considerable success. He published in the *Nouvelles Annales de Mathématiques* papers on geometrical subjects. In my judgment there could be no better preparation for a scientific career. Mathematics, as they are taught in France, habituate the mind to the grasp of general ideas and accustom it to rise from isolated facts to large generalisations. The descriptive side of science, it cannot be doubted, has a cramping influence, and it is the fate of too many of those who devote themselves to it to be unable "to see the wood for the trees." Cornu's mathematical studies, at any rate, decided him for a scientific career, and at the "École normale supérieure" he eventually fixed on botany. He was for a time assistant to Duchartre, professor at the Sorbonne, a man remarkable in many ways, but possessing in a more than ordinary degree the power of presenting with French lucidity the results of current research, not forgetting those of English workers. While with Duchartre, Cornu produced in 1873, as his doctoral thesis, his well-known memoir on the Saprolegniaceæ, to which the Academie des Sciences awarded the Desmazières prize. From the Sorbonne he moved to the Muséum as aide-naturaliste to Brongniart, whose daughter he afterwards married. Brongniart brought down to our own day the best traditions of that illustrious school of French botanists whose philosophic insight into the principles of plant morphology and taxonomy has probably never been rivalled, and certainly not surpassed.

Under Brongniart, Cornu devoted himself to mycology. He published in a comparatively brief period a profusion of papers, in which one is at a loss whether to admire most the untiring industry, the sagacity, or the wide range of his work. Everything pointed to his taking a foremost place in this branch of botany.

But no one can be a mycologist without being drawn into the study of plant diseases, in which fungi play so large a part. Vegetable pathology early attracted Cornu, and he did much excellent work in it. We owe to him the principle, now so familiar as to seem almost obvious, of preventive treatment by the careful destruction by burning of the *débris* of plants which may harbour resting-spores.

In 1868 a mysterious disease made its appearance amongst the vines in the South of France. Planchon, the professor of botany at Montpellier (who owed his early training to Kew), discovered the cause in an insect—*Phylloxera vastatrix*—introduced from the New World. The injury which this ultimately inflicted on the principal cultural industry of France has been compared, and probably with justice, to that of the most devastating of wars. That France has risen triumphant above this, as above so many other disasters, is but one example of the indomitable courage of its people. Cornu, from his official position and special qualifications, was necessarily at once absorbed in the task—hopeless as it seemed at first—of combating the scourge. For at least ten years, from 1872 onwards, he was occupied in little else. It is needless to enumerate the prominent position in various inquiries which he filled; the most important was that of "secrétaire de la commission académique du Phylloxera." His memoir on the whole subject published by the Academy has always seemed to me, for completeness and finish, a model of what such a research ought to be.

Cornu became the acknowledged authority on the subject of the Phylloxera. It had not been foreseen at first that the scourge, when once emancipated from its American home, might, and probably would, invade every wine-growing country. There were those who thought it impossible that it could cross the equator. The expectation was falsified and, in spite of all precautions, it made its appearance at the Cape. I advised the Cape Government to have recourse to Cornu, and his services were as generously given as, I know, they were warmly acknowledged.

In 1884 Cornu succeeded Decaisne as Professor of Culture at the Muséum—a position, if not so extensive in scope as that of the Director of Kew, scarcely less onerous. I had made Cornu's acquaintance some years before, and the circumstance of our similar official positions speedily brought us into closer intimacy. The position of an administrator under Government does not suit every temperament. The enthusiast must expect his ardour to be quenched with a good deal of official cold water. To Cornu, who had something of the engaging qualities of the *méridional*, this was hard to bear. My sympathy with him in his troubles, which were often not small, was certainly sincere, but I am afraid often seemed to him phlegmatic. In any case, the worries of administration pressed hardly on him and, notwithstanding the counsels of common friends, diverted him from the scientific work which we all expected of him, and which his really brilliant powers entitled us to expect.

At the moment that Cornu entered on his new duties, France had turned its attention anew to the field in which, in the past, it had done so much—colonial enterprise. Cornu's ambition—and it was a legitimate one—was to utilise the somewhat dormant resources of the Jardin des Plantes in the work, much on the lines of Kew. For my part it was more than a pleasure to give him all the assistance in my power. Agriculture is the great civilising agency. To reduce nomadic and predatory tribes to cultural pursuits is perhaps one of the most effective of missionary enterprises. Cornu threw himself into the work with little short of passion. What he accomplished, both for the French colonies and for the enrichment of the gardens of his own country, with resources more limited than we have at our disposal in England, is to me surprising. But, unhappily, at the moment when he had attained some measure of success his forces failed him, and he was not allowed to see his work fully crowned with accomplishment.

Cornu was the most loyal of Frenchmen. Had he been less so, he would not have sacrificed to the interests of France the career he might have devoted to science. I cannot but fear that while he lived the sacrifice he made was not fully appreciated. Many of us have wondered that a man who had done so much had never been admitted to the Institute. But that recognition could not have been long delayed, and this adds another regret to his untimely death.

W. T. THISELTON-DYER.

NOTES.

M. MAUPAS, of Algiers, has been elected a correspondant of the Section of Anatomy and Zoology of the Paris Academy of Sciences, in succession to the late M. Marion.

THE Harben medal of the Royal Institute of Public Health will be presented to Prof. Koch at a dinner to be held on July 24. Tickets may be obtained from the honorary secretary, Dr. W. A. Bond.

THE ethnographical collection of shamanistic implements, bead-work, musical instruments, &c., presented by Miss Owen to the Folklore Society, is on exhibition for a few days at the rooms of the Anthropological Society, 3 Hanover Square, W.

THE newly constituted "African Society," founded in memory of the late Miss Mary Kingsley, will hold its inaugural meeting at the United Service Institution, Whitehall, this afternoon, under the presidency of the Marquess of Ripon. This Society has been started with the object of studying the languages, laws and customs of the continent of Africa.

THE annual summer meeting of the Society of Public Analysts will be held at Cambridge on Friday, July 19.

PROF. RUDOLF VIRCHOW has been elected a knight, with the right to vote, of the Order Pour le Mérite for Sciences and Art.

AN official announcement has now been made in regard to the Rockefeller Institute for Medical Research, toward the establishment of which Mr. John D. Rockefeller has recently given 200,000 dollars. We learn from *Science* that the directors are Dr. William H. Welch, Baltimore, president; Dr. T. Mitchell Prudden, New York, vice-president; Dr. L. Emmett Holt, New York, secretary; Dr. C. A. Herter, New York, treasurer; Dr. Theobald Smith, Boston; Dr. Simon Flexner, Philadelphia; Dr. H. M. Biggs, New York. The purpose of the foundation, as the name implies, is to furnish facilities for original investigation, particularly in such problems in medicine and hygiene as have a practical bearing upon the prevention and treatment of disease. The sum of money mentioned above is not an endowment, but may be used for current expenses. The Institute will be situated in New York City. A building will not, however, be erected at present, but research will be conducted in existing laboratories under the auspices of the directors.

THE members of the Institution of Electrical Engineers who are participating in the visit to Germany have been heartily received at Berlin. On Monday they were entertained at dinner by the Berlin General Electric Company and by the firm of Siemens and Halske at the Berlin Fire Prevention Exhibition. Herr Geheimrath Rathenau, in welcoming the English guests, is reported by the *Times* to have said that electrical engineering, in which it would be admitted that Germany had made great progress, was "nothing else than the child of mechanical engineering, which Germans originally learned in England in the factories of London, Birmingham, Glasgow, &c." He thought they would admit that the English masters might well be proud of their German scholars.

IN the House of Commons on Monday Sir W. Hart Dyke asked the President of the Board of Agriculture if he intended to transfer the powers of his Board in respect of agricultural instruction to the Board of Education, he intended that the Board of Agriculture should undertake the organisation and coordination of such instruction throughout England and Wales. In reply, Mr. Hanbury said: "I am not prepared to transfer elsewhere any part of the existing duties of the Board of Agriculture, the functions of which, especially with regard to agricultural instruction, might, on the contrary, with advantage be enlarged. I am unable to state as yet in detail how this can be brought about, but I attach great importance to the necessity for extending the work already done by the Board in collating and publishing the results of experiments and the most recent discoveries bearing on agriculture, both in this country and abroad, and also to the advantage to be gained by friendly cooperation between the Board and county councils in devising the best methods of instruction and experiment."

THE movement to establish a Washington Memorial Institution for post-graduate study and research in Washington appears to have met with success. It originated in the Washington Academy of Sciences, and the organisation and scope have now been agreed upon. The primary aim is to facilitate the utilisation of the various scientific and other resources of the Government for purposes of research, thus co-operating with all universities, colleges and individuals in giving men and women the practical post-graduate training which cannot be obtained elsewhere in the United States and which is now available only to a limited degree in the city of Washington. An Act of Congress approving these principles was passed in March, and reads as follows:—"That facilities for study and research in the Government Departments, the Library of Congress, the National Museum, the Zoological Park, the Bureau of Ethnology, the Fish Commission, the Botanic Gardens, and similar institutions hereafter established shall be afforded to scientific investigators and to duly qualified individuals, students, and graduates of institutions of learning in the several States and Territories, as well as in the District of Columbia, under such rules and restrictions as the heads of the Departments and Bureaus may prescribe." The organisation is independent of Government control, and the management is vested in a board of fifteen trustees and an advisory committee composed chiefly of the heads of Government Departments. *Science* states that the new institution will attain substantially the objects desired by the advocates of a National University, without being subject to the objectionable features of a university sustained by the Government in competition with the existing universities.

THE Council of the Society of Arts have awarded the Society's silver medal to the following readers of papers during the session of 1900-1901:—Major Ronald Ross, F.R.S., for his paper on "Malaria and Mosquitoes;" Dr. W. Schlich, F.R.S., for "The Outlook for the World's Timber Supply;" Lieutenant A. T. Dawson, late R.N., for "Modern Artillery;" Mr. Fritz B. Behr, for "The Proposed High-Speed Electrical 'Monorail' between Liverpool and Manchester;" Mr. Percy R. Macquoid, for "Evolution of Form in English Silver Plate;" Prof. Raphael Meldola, F.R.S., for "The Synthesis of Indigo;" Sir Joshua Fitch, for "School Work in Relation to Business;" Mr. Marconi, for "Syntonic Wireless Telegraphy;" Mr. Henry John Tozer, for "The Growth and Trend of Indian Trade—a Forty Years' Survey;" Colonel Sir T. H. Holdich, K.C.I.E., for "The Greek Retreat from India;" Mr. J. D. Rees, for "Madras, the Southern Satrapy;" the Hon. Sir J. A. Cockburn, K.C.M.G., for "The Commonwealth of Australia;" Lieutenant Carlyon W. Bellairs, R.N., for "The Coal Problem: its Relations to the Empire;" Mr. William Burton, for "Recent Advances in Pottery Decoration;" and Mr. Hugh Stannus, for "Some Examples of Romanesque Architecture in North Italy."

AMATEUR photographers visiting London, and desiring to obtain pictures of interesting sights and objects, will find of service a leaflet prepared by Messrs. Sanders and Crowhurst and Mr. R. W. Paul. A list is given of suitable subjects, arranged in six groups, each group being sufficient for a day's work.

A MEETING of the Physical Society will be held on Friday, June 28, in the Wheatstone Laboratory, King's College, Strand, by invitation of Prof. Adams. Papers will be read on the effect of a high-frequency oscillatory field on electrical resistance, by Mr. S. A. F. White; and on the spectrum of cyanogen, by Mr. E. C. C. Baly and Dr. H. W. Syers.

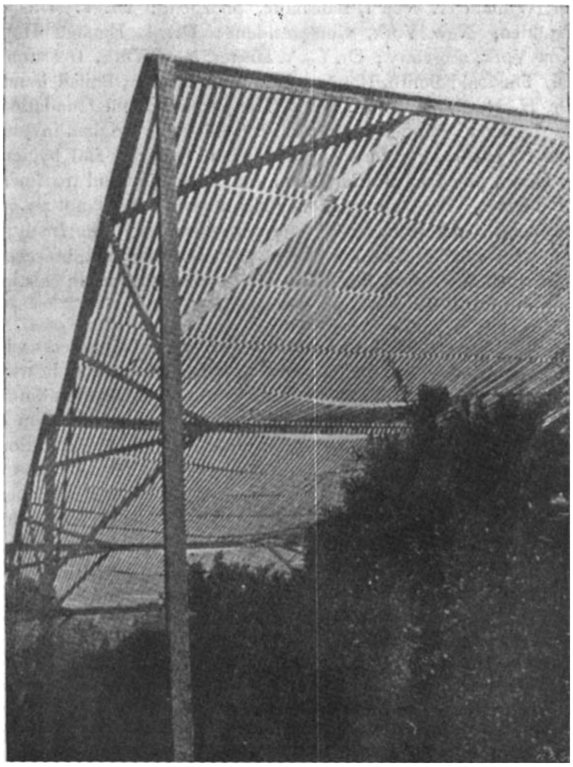
AN interesting incident is recorded in the *Engineer* (June 14). A petrol motor car returning from Biarritz to Paris came to a standstill near Etampes for want of petrol, and as another supply could not be obtained in the neighbourhood the driver resolved to try the only spirit obtainable—namely absinthe. He charged his car tanks accordingly, and afterwards declared that "the motor never ran better than with this improvised fuel."

PARTICULARS of the ethnographical survey undertaken by the Government of India in connection with the census, as suggested by the British Association, are given in the Allahabad *Pioneer Mail*. The following is a summary of the scheme prepared by the Government and sanctioned by the Secretary of State:—Local Governments will select from among their officers a superintendent of ethnography, who will undertake to carry on the inquiries proposed, in addition to his ordinary duties. The superintendent will correspond with the district officers with the object of ascertaining what persons in their districts are acquainted with the customs, traditions, &c., of particular tribes and castes. The information thus obtained will be collated by the superintendent, and will be supplemented by his own inquiries from such representative men as he can find, and by researches into the considerable mass of information in official reports, in the journals of learned societies and various books. The superintendent will work up all this material into a systematic account of the tribes and castes of the province somewhat in the form adopted in "The Tribes and Castes of Bengal," and that followed by Mr. Crooke for the North-Western Provinces and Oudh. By working on these lines the Government of India believe it will be possible to get a fairly complete account of the ethnography of the larger provinces drawn up within four or five years. It is estimated that the survey will cost 10,000*l*., excluding the cost of printing the results, which cannot be calculated at present. The Secretary of State has accorded his sanction to an expenditure not exceeding this amount. It is also proposed to collect physical measurements of selected castes and tribes. In Madras the work will be done by Mr. Thurston, superintendent, Central Museum, whose ethnographic researches in the south of India are well known, and who, it is understood, is likely to be selected by the Provincial Government as superintendent of ethnography for the Madras Presidency. The general direction of the scheme will be entrusted to Mr. Risley, whose official title will be for this purpose Director of Ethnography for India. The Governor-General in Council trusts that on this, as on former occasions, ethnologists and scientific societies in England and America will assist the Director with their advice, will refer to him points which they may wish to be made the subject of inquiry in India, and will, if possible, supply him with copies of publications bearing on the researches now about to be undertaken.

AMONG the many useful publications issued annually by the Royal Observatory of Belgium we draw special attention to "Éphémérides météorologiques et naturelles." The work is an excerpt from the "Annuaire météorologique" for 1901, and contains the monthly and annual values of the principal meteorological elements and phenological observations for Brussels (or Uccle) for each year from 1833 to 1900. Similar information relating to the wind has been published in a separate work. We extract the following interesting items from this long and valuable series of observations. The absolute maximum shade temperature was 95°·4 F. and the minimum 4°·4. The average annual rainfall amounts to 28·56 inches and the mean number of rainy days is 190. The relative humidity at noon is fairly uniform, varying in the yearly average from a minimum of 67·6 to a maximum of 79·9 per cent.

IN the *Bulletin* of the Cracow Academy M. S. Zaremba discusses the proof of the existence, for any given connected region bounded by a surface S, of a series of functions analogous to spherical functions and satisfying the well-known physical equation $(\nabla^2 + k^2)V = 0$. The fact that such functions exist was discovered by Poincaré, and demonstrated by Le Roy for surfaces satisfying certain conditions. Stekloff has studied the same problem from a different point of view, but the methods of Le Roy and Stekloff depend on certain transformations of the surface for which the existence of so-called fundamental functions has to be proved. M. Zaremba now claims, without employing any transformation, to have proved the existence of fundamental functions for any surface satisfying certain stated conditions, such as, for example, that the tangent plane at every point is unique. The series of functions has not been proved to be infinite in number, but this gap in the proof the author considers can be easily filled.

SYSTEMATIC efforts are made in California to reduce injury to fruits by frost. Mr. A. G. McAdie describes some of the means used in the U.S. *Monthly Weather Review* for February, and the accompanying illustration is one of several which illustrate his paper. This represents an elaborate structure of lath-screens in use upon one fruit ranch. The lath covering may be considered as forming a well-ventilated hot-house, and there is no question as to its protective value, but the expense of erecting it will prevent its wide adoption. An investigation of the conditions producing frost has shown that frost is primarily a problem in air drainage. Mr. McAdie states the principle that "wherever the air was stagnant the injury from frost was most marked; and conversely, wherever the air was in motion, there was little damage from frost." In California, much of the damage appears to be done by the sudden warming of the chilled fruit at sunrise. If a screen is interposed between the fruit and the sun, so that the warming is gradual, the fruit is saved from injury.



Screen for protecting fruit from frost.

"SUNNY DAYS AT HASTINGS AND ST. LEONARDS" is the title of a well-illustrated and well-printed little handbook for south-east Sussex, by Messrs. W. H. Sanders and P. Row. There is a "six-inch" map of Hastings and St. Leonards, and another map, on the scale of an inch to four miles, of the country as far as Seaford, Tunbridge Wells and Ashford—all for the price of

6d., being vol. xvi. of the handbooks published under the auspices of the "Homeland Association for the Encouragement of Touring in Great Britain and Ireland." Apart from the descriptions of places of historic interest, including many famous old castles, it is interesting to find chapters on the geology of the district and on the prehistoric people of Hastings, by Mr. W. J. Lewis Abbott. The great physical changes recorded in the rocks are briefly pictured, though with few local descriptions, and then Mr Abbott (whose enthusiastic labours in this field are well known) tells of the works of man in Plateaulithic, Palæolithic and later ages, concerning which abundant material has been obtained in Sussex and other parts of the south-east of England. A good account is also given of the various objects of interest in the Hastings and St. Leonards Museum.

FROM the Report of the Australian Museum for 1899 we learn that Mr. A. J. North's "Catalogue of the Nests and Eggs of Birds found breeding in Australia" is making satisfactory progress. The work, which is to include thirty plates of eggs and forty of nests, will be expensive, so that its cost is to be spread over several years. Apart from a complaint as to lack of funds, the general progress of the Museum seems to be satisfactory.

TWO interesting papers on wild life in Australia appear in the May number of the *Victorian Naturalist*, the one, by Mr. D. le Souef, being entitled "Among the Waterfowl in Riverina," and the other, by Mr. C. French, "A Naturalist on the Mallee." In the latter reference is made to the appearance of a swarm of caterpillars of the "army worm," which caused incalculable damage to the "wallaby grass." The caterpillars were, however, attacked in turn by a fungus (*Entromophthora australis*), which probably made a clean sweep of the entire horde.

THE latest issue of the *Zeitschrift für wissenschaftliche Zoologie*, which completes vol. lxix., is mainly devoted to morphological subjects, although it includes a description of a new genus (Ludwigia) of holothurian from New Zealand, represented by a species described in 1897 as *Colochirus ocnoides*. The morphological subjects comprise the development of the rook, the nature of the reproductive organs of the Ctenophora, the development of the vertebral column of the rat, the structure of the gills of fishes, and the difference between the female reproductive organs in the gnats and mosquitoes of the genera Culex and Anopheles.

TO the June number of the *Zoologist* Mr. W. W. Fowler communicates an interesting article on the winter singing of the thrush. Owing to the mildness of last November thrushes "were unusually numerous, and almost every individual seemed to be uttering some kind of song, and continuing it more or less from early morning, when the voicefulness was at its highest point, till sunset, and even later." The author set himself the task of determining whether this unusual outburst of song was due merely to the birds being in good condition, or whether it had any connection with the ensuing pairing-season. Despite a complete cessation between January 3 and 21, he inclines to think "that the great outbreak of song in the autumn was, in the case of mature birds at least, a forecast of the coming breeding-season."

THE most striking feature in the Report of the Field Columbian Museum at Chicago for the year 1899-1900 is formed by the full-page illustrations of groups of mammals mounted amid their natural surroundings. By far the best of these represents a party of five Somali hartebeests in the Haud desert, the attitudes of the animals being absolutely life-like. There is nothing to approach this grouping in our own national museum. The lectures delivered from time to time in the museum appear to attract good audiences. Two courses, one of eight and the other of nine lectures, were delivered during the period in question. They comprised anthropological, zoological and economic subjects. The total expenditure of the museum during the year was a little more than 24,000*l.*

WE have received a pamphlet indicating the contents of a bibliography and subject-index of the Schizomycetes (Bacteria) now appearing in the "Scientific Roll." It is stated to show the scope and extent of the work in January 1901, but is subject to alteration. The method of cataloguing seems to be to divide the subject into a number of groups—general, diseases, micro-organisms, &c.—each of which is again subdivided, and the subdivisions have appended to them the years in which papers on their subject-matter have appeared. In the second half of the work the matter is divided into years, and under each year an alphabetical list of authors is given, with the titles of their papers. The method of arrangement would have been rendered far clearer had a few specimen pages been included. The few references we have checked we have found to be accurately given. Judging from the list of contents there are overlappings and omissions. For example, "Bacillus of mouse typhoid" and "Bacillus typhi murium," "Bacillus of Plague" and "Bacillus pestis" are given as separate headings with different references, while "Micrococcus Melitensis" and "Bacillus pseudotuberculosis" seem to be omitted. The work may be, and might be made, a very valuable one, but details are wanting to enable a correct estimate as to its value being formed. For example, there is no indication whatever as to the journals, &c., that are to be indexed; a list of these should be given.

MR. BERNARD QUARITCH has issued a catalogue of the valuable entomological library collected by the late Mr. J. H. Leech, together with other important works on natural history and botany offered for sale at his establishment in Piccadilly.

MESSRS. DULAU AND CO. announce for publication in July a "Flora of Guernsey and the Lesser Channel Islands," by Mr. Ernest D. Marquand. The work will comprise classified lists, with full details of local distribution, of the flowering plants, ferns, fern-allies, characeæ, mosses, hepaticæ, fungi, lichens, sea-weeds, freshwater algæ, and diatomaceæ which have been found in Guernsey, Alderney, Sark, Herm, Jethou, Lithou, Crevichon and Burhou. Each island is treated as a separate and independent botanical area, possessing its own peculiar features. It is stated that upwards of 2500 different species are recorded for Guernsey alone.

THE syndics of the Cambridge University Press have undertaken the publication of the first part of the "Index Animalium," to the preparation of which Mr. C. Davies Sherborn has devoted so many years. The object of the index is to provide zoologists with a complete list of all generic and specific names given by authors to animals both recent and fossil since January 1, 1758, the date of the tenth edition of Linnæus' "Systema Naturæ." With each name will be given an exact date and a reference intelligible to the layman as well as to the specialist. The British Association appointed a special committee to watch over the inception and progress of the work, the preparation of which was undertaken in 1890. Financial support has been given by the British Association, the Royal Society and the Zoological Society, while the authorities of the British Museum have afforded continual assistance. The portion of the work already completed and in the press covers the period from 1758–1800 and consists of 61,600 entries.

WE have received from Messrs. Müller, Orme and Co. a specimen apparatus, designed by Mr. C. T. Tyrer, for use in making the Marsh-Berzelius test for arsenic. Commonly the flask in which the hydrogen or the arseniuretted hydrogen is generated is closed either with an ordinary cork or with an india-rubber stopper, and, with the object of arresting seleniuretted and sulphuretted hydrogen, the gas, as it passes from the flask to the mirror-tube, is brought in contact with lead acetate solution, sometimes bubbled through the liquid and sometimes passed through cotton-wool or over a roll of filter-paper saturated with the solution. Where cork has been in contact with arseniuretted hydrogen there is danger of sufficient of the arsenic compound being retained by this porous substance to render its continued use a possible source of error; with rubber there is always the chance that arsenic or antimony may be present as one of the constituents of the material, and as regards the use of lead acetate it has been urged that to bubble the gas through a small quantity of the solution is safer than to pass it through or over cotton-wool or filter-paper. The apparatus sent us has been designed to avoid the use of a cork or rubber stopper, and to include a convenient means of passing the gas through a minimum quantity of lead acetate solution. To a wide-necked flask of 200 c.c. capacity is fitted a hollow glass stopper, perforated by the gas-exit tube, which supports a bulb containing a small quantity of 10 per cent. acetate of lead solution. The stopper is ground to fit tightly into the neck of the flask, and as the gas passes up the exit-tube it bubbles through the lead acetate solution in the bulb and so on to a calcium chloride drying-tube, to which is attached the mirror-tube in which the arseniuretted hydrogen is decomposed. The apparatus is neat and effective.

THE additions to the Zoological Society's Gardens during the past week include three Derbian Wallabys (*Macropus derbianus*, ♂ ♀ and juv.) from Australia, presented by Captain Ben Jones; a Ring-tailed Coati (*Nasua rufa*) from South America, presented by Mr. Thomas Mackenzie; an Egyptian Jerboa (*Dipus aegyptius*) from North Africa, presented by Mr. J. Manuel; an Active Amazon (*Chrysotis agilis*) from Jamaica, presented by Mrs. V. A. Taylor; a Darwin's Rhea (*Rhea darwini*) from Patagonia, presented by Mr. H. F. Fox; a Large-billed Weaver-Bird (*Ploceus megarhynchus*, ♂) from Naini Tal, deposited; a Baya Weaver-Bird (*Ploceus baya*, ♂), two Black-throated Weaver-Birds (*Ploceus atrigularis*), a Black-headed Finch (*Munia malacca*), a Chestnut-bellied Finch (*Munia rubro-nigra*), two Hybrid Finches (between *Munia malacca* and *M. rubro-nigra*) from India, presented by Mr. Frank Finn; two Bennett's Wallabys (*Macropus bennetti*) from Tasmania, a Black Wallaby (*Macropus ualabatus*) from New South Wales, a Ring-necked Parrakeet (*Palaeornis torquata*) from India, an August Amazon (*Chrysotis augusta*) from Dominica, fourteen Algerian Skinks (*Eumeces algeriensis*) from North-west Africa, a Derbian Sternothere (*Sternothaerus derbianus*) from West Africa, three Simony's Lizards (*Lacerta simonyi*) from the Canaries, eight Three-streaked Skinks (*Mabuia trivittata*), two Streaked Skinks (*Mabuia vittata*), a Hissing Sand Snake (*Psammophis sibilans*) from Syria, four Grey Monitors (*Varanus griseus*), five Common Skinks (*Scincus officinalis*), four Ocellated Sand Skinks (*Chalcides ocellatus*), six Turkish Geckos (*Hemidactylus mabouia*) from Western Asia, deposited; an Axis Deer (*Cervus axis*, ♂) from India, purchased; six Silver Pheasants (*Euplocamus nycthemerus*), four Gold Pheasants (*Thaumalea picta*), six Common Pheasants (*Phasianus colchicus*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN JULY.

July 1. 9h. Jupiter in conjunction with moon. Jupiter 3° 42′ S.
1. 19h. Saturn in conjunction with moon. Saturn 3° 36′ S.
2. 9h. 29m. to 9h. 47m. Moon occults B.A.C. 6710 (mag. 6·0).
3. 11h. 2m. to 14h. 6m. Transit of Jupiter's Sat. III.
5. 9h. Saturn in opposition to the sun.
15. Venus. Illuminated portion of disc = 0·936, of Mars = 0·900.
17. 10h. 34m. Minimum of Algol (β Persei).
22. 10h. 59m. Moon in conjunction with α Virginis (Spica).
24. Saturn. Outer minor axis of outer ring = 18″·08.
28. 9h. 51m. to 11h. 6m. Moon occults 21 Sagittarii (mag. 4·9).
28. 11h. Jupiter in conjunction with moon. Jupiter 3° 37′ S.
29. 0h. Saturn in conjunction with moon. Saturn 3° 34′ S.
29. 8h. 33m. to 9h. 48m. Moon occults *d* Sagittarii (mag. 4·9).

BLACK SPOT ON JUPITER.—On June 2, Sig. J. Comas Sola, working at the observatory of Barcelona with a six-inch Grubb equatorial (power 200), noticed a strange marking on System II. of the planet's belts. From the time at which it passed the central meridian on that day its longitude would appear to be about $\lambda = 73^{\circ}{\cdot}1$; its latitude would be about 15°.

The tone of the spot is almost black, with a light garnet tinge, and might without close attention be mistaken for the shadow of a satellite. It is very sharp and circular, but on careful examination a very pale penumbra is seen before and behind the spot itself, the posterior penumbra being the more prominent of the two.

No signs of this spot were apparent on May 31.

TEN-YEAR GREENWICH STAR CATALOGUE FOR 1890.—The second ten-year star catalogue recently issued from the Royal Observatory forms Appendix II. to the *Greenwich Observations* for 1898, and contains the reduced places of 6892 stars for the epoch 1890·0, from observations made with the transit circle during the period 1887–1896.

The various corrections investigated are described at length, one interesting point brought out being that the observations from 1895–1899 show a diurnal change in the position of the nadir, the observations taken about noon and midnight giving positive corrections to the observations made near the time of sunset.

Comparisons are also given with the data of other standard catalogues, from some of which the proper motions of 174 stars are deduced.

NEW NEBULÆ.—In the *Comptes rendus* (vol. cxxxii. pp. 1465–1467) M. Bigourdan gives a descriptive table of twenty-one new nebulæ discovered with the north-west equatorial of the Paris Observatory, bringing up the number found in this way to 392.

PARALLAX OF μ CASSIOPEIÆ.—The eighteenth volume of "Contributions from the Observatory of Columbia University" contains an investigation of the parallax of μ Cassiopeia, made by Mr. G. N. Baur from the Rutherfurd photographic measures of twenty-eight plates of the region taken during 1870–1873.

The final value determined for the parallax is

$$\pi = 0''{\cdot}238 \pm 0{\cdot}014.$$

A table is also included showing the positions of fifty-six of the neighbouring stars used in the determination.

NEGATIVE AFTER-IMAGES AND COLOUR-VISION.

FOUR years ago I described an apparatus by which apparent transformations of colour could be produced (*Proc. Roy. Soc.*, vol. lxi. p. 268; NATURE, vol. lvi. p. 128). The essential part of it is a disc, partly black and partly white, having an open sector at the junction of the black and white portions, as shown in Fig. 1. If such a disc is caused to turn five or six times in a second while its surface is strongly illuminated, a coloured object placed behind it and viewed intermittently through the opening generally appears to assume an entirely different hue, more or less approximately complementary to the true colour of the object. A piece of red ribbon, for example, is seen as bluish-green and a green one as pink. The effect is due to the formation of negative after-images upon the white portion of the disc.